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## UK Patent Application (19) GB (11) 2 328 523 (13) A

(43) Date of Printing by UK Office 24.02.1999

- (21) Application No 9825598.7
- (22) Date of Filing 02.05.1997
- (30) Priority Data (31) **08654335**
- (32) 28.05.1996
- (33) US
- (86) International Application Data PCT/US97/07461 En 02.05.1997
- (87) International Publication Data W097/45778 En 04.12.1997
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- (51) INT CL<sup>6</sup>
  G05B 17/02
- (52) UK CL (Edition Q )
  G3N NGBE1 N376 N392 N392A N404
- (56) Documents Cited by ISA
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- (58) Field of Search by ISA INT CL<sup>6</sup> G05B
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### (54) Abstract Title Real-time process control simulation method and apparatus

(57) An industrial plant controller device's control algorithm is ported from a real-time proprietary operating environment (an industrial control plant) to a non-proprietary environment such as an ethernet running TCP/IP. In combination with an application programmer's interface, the invention allows manipulation of the actual device controller's control algorithms including the capability to arbitrarily stop and start the controller algorithm's operation, exercise the controller algorithm at a rate slower and faster than real-time, restore the controller algorithm to a known state, and store the configuration of the algorithm controller state. The increased fidelity provided by the invention allows an operator to design, test, and verify control system strategies in a more comprehensive manner than possible in prior art systems. An added benefit of the invention is that it can be used in an improved operator training system.

